

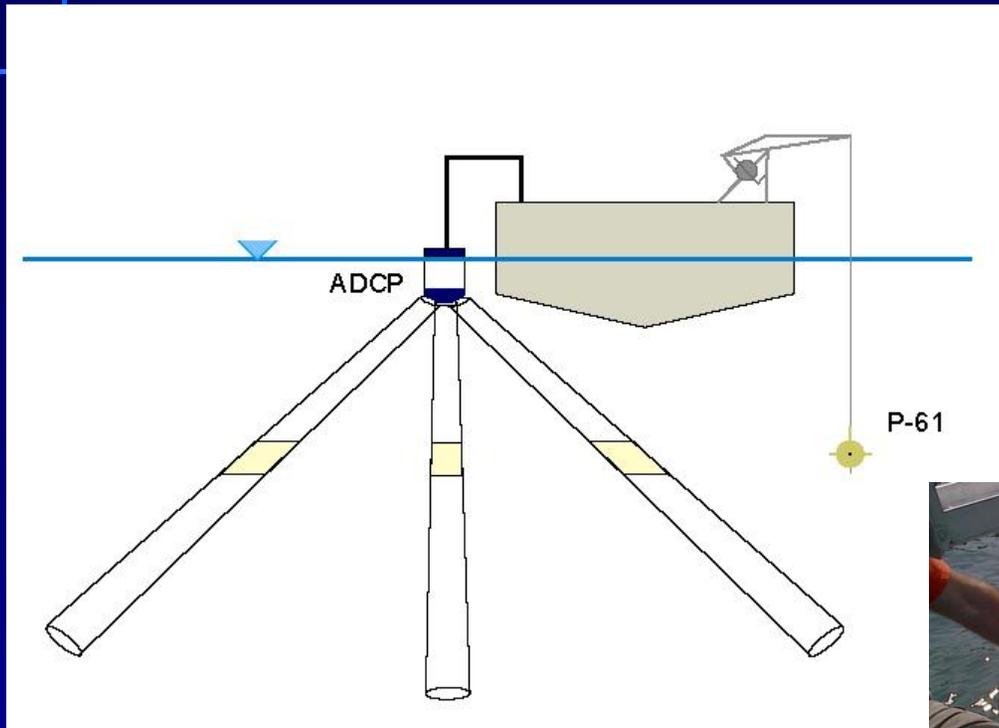
Acoustic Backscatter as a Surrogate for Suspended Sediment Concentration



- Measure **Acoustic backscatter (ABS)** and **velocity** with uplooking acoustic Doppler current profiler (ADCP)
- Relate ABS to SSC
- Develop index-velocity rating

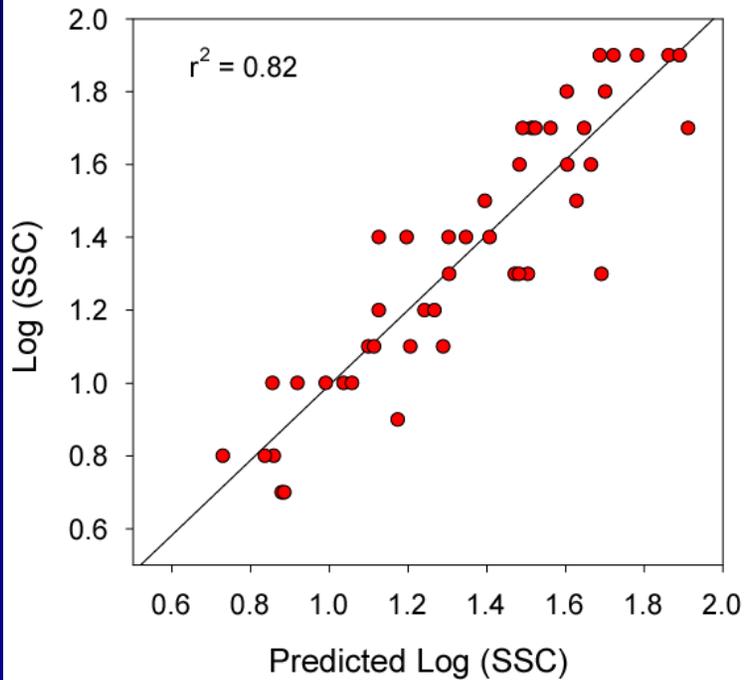
$$\text{SS Load} = \text{Discharge} * \text{SS Concentration}$$

Suspended Sediment Data Collection

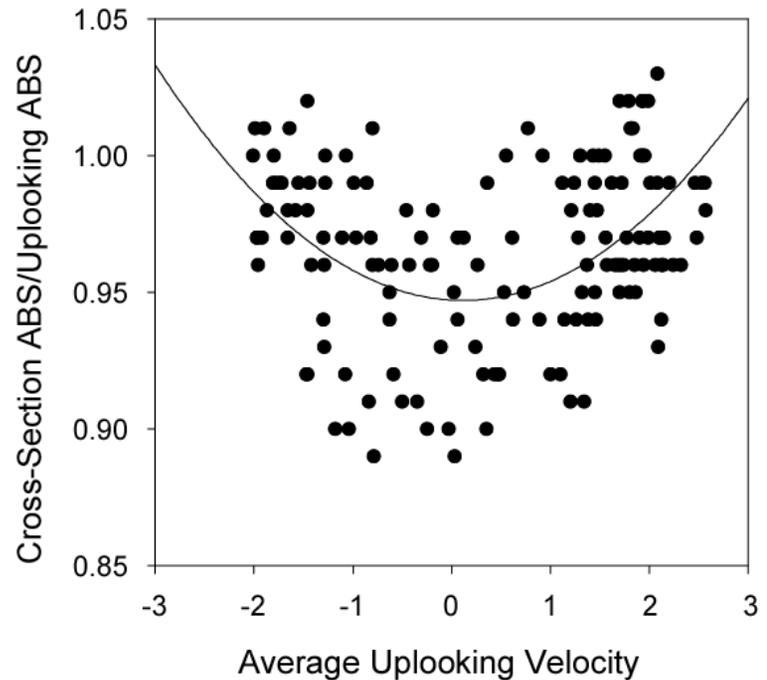


Suspended Sediment Rating

Suspended Sediment Concentration (SSC) Rating



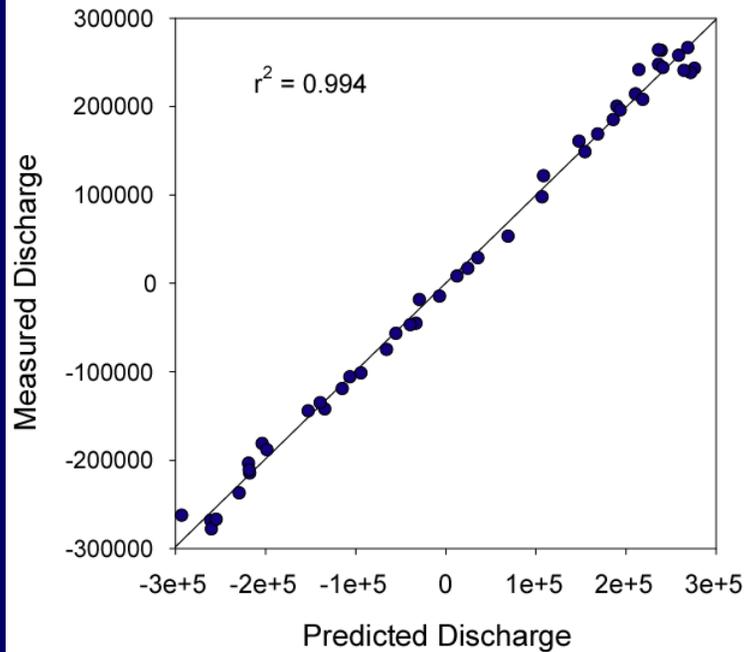
Cross-sectional Representativeness



$$\text{SSC} = 10 (0.035 \times \text{ABS} - 0.01 \times \text{Temp} - 1.21) \times 1.055$$

Discharge Rating and Verification Measurements

Poughkeepsie Discharge Rating



$$\text{Predicted } Q = 130,883 \times \text{AUV} + 443.7 \times \text{WS} - 14,244$$

where:

AUV = Average ADCP Uplooking Velocity

WS = Wind Stress

Verification Measurements

